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ABSTRACT

This scope and sequence guide, developed for an auto body repair vocational education program, represents an initial step in the development of a systemwide articulated curriculum sequence for all vocational programs within the Metropolitan Nashville Public School System. It was developed as a result of needs expressed by teachers, parents, and the business community for sequential structure within the vocational education curriculum. The guide contains an introduction, course description, general course objectives, course content (with specific objectives) in outline format, and a brief list of textbooks and curriculum guides. This three-year course in auto body repair consists of classroom and practical instruction in three general areas of automobile damage repair. The units of instruction include development of manipulative skills such as welding and brazing, body and frame alignment, metal straightening, application and finishing of body solder and plastic fillers, and sanding and spray painting. Students are taught to use all the tools of the trade safely and skillfully. The program also provides students with the opportunity to participate in Vocational Industrial Clubs of America (VICA) leadership training, and in local, state, and national skills competitions. (KC)

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AUTO BODY REPAIR

SCOPE AND SEQUENCE

VOCATIONAL EDUCATION

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Metropolitan Public Schools

Nashville Davidson County, Tennessee

Charles O. Frazier, Director

FOREWORD

This scope and sequence guide, developed for the Auto Body Repair Vocational Education program, represents an initial step in the development of a systemwide articulated curriculum sequence for all vocational programs within the Metropolitan Nashville Public School System. It is a direct result of needs expressed by teachers, parents, and the business community for sequential structure within the vocational education curriculum. An articulated vocational curriculum allows a student to move from one level of instruction to the next without repeating learning tasks already mastered, and without experiencing gaps in the presentation of relevant instructional material.

A goal of this curriculum effort is to provide teachers a usable guide based on input from the teachers. The initial step was an identification of course content, with all teachers having an opportunity to contribute. What follows is a publication using the teachers' contributions: a sequential listing of objectives and skills for each program offering.

This guide does not include all specific resource materials that may be used to assist students in acquiring minimum competencies. It is to serve as a guide for the sequence of course content and scope of what is to be taught. This guide content is extremely important and its use is encouraged. The suggested competencies and resource materials allow instructors an opportunity to be creative and resourceful in meeting the needs of individual programs and students.

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INTRODUCTION

The purpose of this guide is to provide the continuity of a scope and sequence of auto body concepts and to serve as a guide for teachers in planning programs within this scope and sequence. This guide is flexible and teachers are encouraged to stay within the six weeks scope, teaching areas they feel most comfortable within the outline.

Teachers are encouraged to draw from their own experiences, interests and creative ideas for activities related to unit concepts.

COURSE DESCRIPTION

This course in Auto Body Repair will consist of classroom and practical instruction in three general areas of automobile damage repair. The units of instruction include development of such manipulative skills as welding and brazing, body and frame alignment, metal straightening, application and finishing of body solder and plastic fillers, sanding and spray painting. The student will be taught to use safely and skillfully all of the tools of the trade.

Students have the opportunity to participate in Vocational Industrial Clubs of American (VICA) leadership training and in local, state and national skills competitions.

GENERAL COURSE OBJECTIVES

1. To develop a safe work environment
2. To develop a step-by-step learning procedure for the repair of automobiles
3. To develop a hands-on learning situation for the student through outside projects
4. To evaluate and motivate students for high achievement
5. To provide training that is adaptable to the handicapped student
6. To recruit females into auto body classes
7. To prepare students for entry level employment in the auto body trade
8. To offer advanced training to the exceptional student
9. To emphasize to the students the need for the acquisition of a personal set of tools

COURSE CONTENT FOR AUTO BODY REPAIR I

(First Semester)

I. **Orientation (1 week)**

Specific objectives:

To become familiar with the rules and policies necessary to have a safe shop
To become acquainted with the purposes of VICA
To participate in a club meeting

A. Develops familiarity with occupational field of auto body repair

B. Learns school and shop rules and policies

C. Learns shop safety

D. Understands VICA organization and parliamentary procedure

II. **Body and frame construction (2 weeks)**

Specific objectives:

To relate the history of body and frame construction to the present day assembly procedures
To identify the constructive units of a vehicle

A. Develops awareness of history of body and frame construction

B. Understands formation of metal

C. Identifies types of frame construction

D. Identifies units of bodies and cabs

E. Identifies units of doors and deck lids

III. **Basic hand tools (2 weeks)**

Specific objectives:

To identify and choose the proper tool for the proper job
To use all hand tools properly

A. Selects and uses general hand tools

III. **Basic hand tools continued:**

B. Selects and uses body hand tools

IV. **Power tools (2 weeks)**

Specific objectives:

To operate all power tools successfully
To develop skill in the safe use of each tool

A. Uses jacks

B. Uses tools and attachments

C. Learns appropriate application of power tools

D. Develops safe skills in using miscellaneous power tools

V. **Bumping and dinging (5 weeks)**

Specific objectives:

To define terms associated with roughout
To analyze and determine the order of repair of a damaged automobile
To fit body panels to proper dimensions and specifications
To roughout all repairable panels to proper dimensions

A. Learns surface preparation

B. Identifies roughout terms and repairs panels

C. Learns metal finishing

VI. **Welding and cutting (5 weeks)**

Specific objectives:

To properly set up, light, adjust and turn off oxyacetylene welding equipment
To select the proper size welding tips according to manufacturer's recommendations
To choose the correct filler rod for a welding job

A. Practices cutting techniques

B. Learns fusion welding

C. Learns braze welding

VI. **Welding and cutting continued:**

D. Learns shielded arc welding

VII. **Application and review of basic skills and knowledge (1 week)**

Specific objective:

To test and review all material covered

A. Reviews all material

B. Completes semester examination

COURSE CONTENT FOR AUTO BODY REPAIR I

(Second Semester)

I. Metal finishing (6 weeks)

Specific objectives:

To define terms associated with body filling
To prepare a damaged panel filler and apply plastic as required

A. Learns grinding and sanding

B. Prepares metal for finishing

C. Learns body filling

D. Repairs rust damage

II. Key panel alignment (2 weeks)

Specific objectives:

To align body panels and trim as required
To assemble headlights and tail lights

A. Aligns hood

B. Aligns fender

C. Assembles headlights

D. Aligns bumper

E. Aligns door

F. Assembles deck lid

G. Assembles tail light

H. Aligns moldings and trim

III. Spray painting equipment and supplies (6 weeks)

Specific objectives:

Specific objectives continued:

To identify the various types of refinishing equipment
To clean a spray gun, pressure pot and airless system
To drain an air regulator
To drain and service an air compressor

A. Identifies and makes use of air supply equipment

B. Acquires skills in automotive painting

IV. **Collision and basic estimating (2 weeks)**

Specific objectives:

To match terms and definitions associated with estimating
To analyze a damaged automobile, and properly write an estimate for repair
To estimate minor repairs as well as paint jobs

A. Learns estimating terminology

B. Makes an estimate on minor repairs

C. Understands types of auto insurance

V. **Application and review of basic skills and knowledge (2 weeks)**

Specific objective:

To determine how well students can apply skills taught

A. Reviews assignments and projects

B. Completes tests and examination

COURSE CONTENT FOR AUTO BODY REPAIR II

(First Semester)

I. Orientation (1 week)

Specific objectives:

To review the rules and policies necessary to have a safe shop
To review VICA objectives
To participate in club activities

A. Becomes familiar with expectations of Auto Body Repair II

B. Reviews rules and policies

C. Reviews shop safety

D. Develops advanced understanding of VICA organization and parliamentary procedures

II. Basic measurement (3 weeks)

Specific objectives:

To identify tools used in measuring
To distinguish between 1/8 and 1/16 inch scale rules
To demonstrate the ability to read rules and tapes to the 16th scale

A. Identifies types of measuring tools

B. Uses measuring objects

III. Welding and metallurgy (6 weeks)

Specific objectives:

To learn the terms associated with welding
To learn how to arc weld and gas weld
To know the properties of welding and metallurgy

A. Learns welding terminology

B. Practices gas metal arc welding (MIG or TIG)

C. Understands properties of metal

IV. **Shrinking and heat treating (4 weeks)**

Specific objectives:

To define the terms associated with the shrinking process
To explain hot and cold shrinkage of automobile metal
To shrink stretched automobile metal using the appropriate method

A. Learns shrinking process terms

B. Understands principles of shrinking

C. Practices heat treating methods

V. **Frame alignment (3 weeks)**

To define terms associated with frame alignment
To determine the method of repair from the type of damage
To align damaged frame members and straighten the damage to original specifications and dimensions

A. Becomes familiar with frame alignment terms

B. Learns under body measurement techniques

C. Aligns frame

D. Aligns bumper and panel

VI. **Application and review of basic skills and knowledge (1 week)**

Specific objective:

To apply skills taught

A. Reviews all material covered

B. Completes semester examination

COURSE CONTENT FOR AUTO BODY REPAIR II

(Second Semester)

I. Glass and trim (2 weeks)

Specific objectives:

To define the terms associated with glass and trim
To identify various fasteners and their use

A. Learns terms associated with glass and trim repair

B. Understands exterior molding and trim fasteners

C. Becomes familiar with interior trim

D. Becomes familiar with hardware

E. Becomes familiar with glass

F. Identifies types and uses of fasteners

II. Estimating and insurance (2 weeks)

Specific objectives:

To match terms and definitions associated with estimating
To analyze a damaged automobile and properly write an estimate for repair
To estimate minor and major repairs as well as spot painting and all-over paint jobs

A. Learns terms associated with estimating both major and minor repairs

B. Advances knowledge on estimating and insurance

C. Makes estimates on minor and major repairs

III. Front end alignment (2 weeks)

Specific objectives:

To define terms associated with front end alignment
To determine the method of repair from the type of damage

A. Learns terms associated with alignment repair

III. **Front end alignment continued:**

B. Learns basic angles

C. Adjusts caster

D. Adjusts camber

E. Adjusts toe-in

F. Adjusts toe-out on turns

G. Adjusts steering—axis inclination

IV. **Application and review of basic skills and knowledge (12 weeks)**

Specific objective:

To perform all skills taught—hands-on experiences

A. Reviews material covered

B. Completes assigned projects

COURSE CONTENT FOR AUTO BODY REPAIR III

(First Semester)

I. **Orientation and safety (1 week)**

To review all school policies
To review shop safety

A. Reviews school and shop rules

B. Reviews shop safety

II. **Auto body shop business (6 weeks)**

Specific objectives:

To learn how to select the location and equipment needed for a shop
To learn how to select the personnel needed to operate a profitable business

A. Learns criteria for selecting location of shop

B. Learns criteria for selecting design of shop

C. Learns how to select shop equipment

D. Learns how to select office equipment

E. Learns how to select personnel

III. **Fiberglass bodies (6 weeks)**

Specific objectives:

To identify the terms and products used in fiberglass repair
To determine the damage and repair of a fiberglass body

A. Learns fiberglass repair terms

B. Understands construction of fiberglass

C. Determines repair needs of a body

IV. **Application and review of basic skills and knowledge (5 weeks)**

Specific objective:

Specific objective continued:

To perform all skills taught

A. Reviews all skills taught

B. Completes assigned projects

COURSE CONTENT FOR AUTO BODY REPAIR III

(Second Semester)

I. **Professional automotive painting (6 weeks)**

Specific objectives:

To identify special-effect paints, their use and application
To detail a custom auto

A. Learns custom finishes and application

B. Learns detailing and application

II. **Pinstriping and decaling (6 weeks)**

Specific objective:

To identify the methods, materials and application of pinstriping and decaling

A. Learns painted pinstriping and application

B. Learns pinstriping tape and application

C. Learns decaling and application

III. **Application and review of basic skills and knowledge (6 weeks)**

Specific objective:

To perform all skills taught

A. Reviews skills

B. Completes assigned projects

RESOURCE MATERIALS

Textbooks

Griffin, Ivan H. and Roden, Edward M. Basic TIG and MIG Welding. Delmar Publishers, 1971.

Rhone, F. C. Total Auto Body Repair. Bobbs-Merrill Company, Inc., 1976.

Tobolt, Bill. Auto Body Repairing and Repainting. Goodheart-Willcox Company, Inc., 1982.

Curriculum Guides

The Oklahoma Curriculum Guide for Auto Body. Oklahoma State Board of Vocational and Technical Education, 1972.